REMARKS

Status of the Claims

Claims 1-28 and 30-74 are currently pending in this application. Claims 31-74 have been withdrawn from consideration as being drawn to a nonelected invention. Claims 1-28 and 30 were examined and rejected.

In this amendment, claims 22 and 25 are canceled without prejudice or disclaimer, and claims 1-3, 8, 23, 24 and 26-18 are amended to correct claim dependencies and to clarify the invention. Support for the amendment may be found, for example, at page 44, lines 3-6 and page 71, lines 24-27 of the application as filed and in original claims 22 and 25. No new matter has been added. Upon entry of this amendment, claims 1-21, 23, 24, 26-28 and 30-74 will be pending, of which claims 1-21, 23, 24, 26-28 and 30 are subject to further examination. Entry of the amendment and reconsideration in view of the following comments is respectfully requested.

With respect to all amendments, Applicants have not dedicated or abandoned any unclaimed subject matter and moreover have not acquiesced to any rejections and/or objections made by the Patent Office. Applicants expressly reserve the right to pursue prosecution of any presently excluded subject matter or claim embodiments in one or more future continuation and/or divisional application(s).

Rejection under 35 U.S.C. § 101, Double-Patenting

Claims 1-22 and 30 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as allegedly unpatentable over claims 1-23 of co-pending U.S. Patent Application Serial No. 10/556,182, as set forth in detail on pages 4-5 of the OA.

Applicants respectfully request that this provisional double patenting rejection be held in abeyance until such time as any of the claims at issue have been allowed.

Rejections under 35 U.S.C. § 102

Anticipation by Fodor

Claims 1-8, 21 and 30 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Fodor *et al.* (US 6,355,432, hereinafter "Fodor").

The Office alleges that Fodor discloses the limitations of independent claim 1 by teaching a process capable of producing a matrix having each of the different possible 10-mer oligonucleotides (col. 19, lines 42-66) and therefore *inherently* comprising each of the presently claimed oligonucleotide probes. Applicants respectfully traverse this rejection.

The legal standard for anticipation under 35 U.S.C. § 102 is one of strict identity. *Trintec Industries, Inc. v. Top-U.S.A. Corp.*, 63 U.S.P.Q.2d 1597 (Fed. Cir. 2002). To anticipate a claim, a single prior source must contain each and every limitation of the claimed invention. *In re Paulson*, 30 F.3d 1475, 1478-79, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994) (*citing In re Spada*, 911 F.2d 705, 708, 15 USPQ2 d 1655, 1657 (Fed. Cir. 1990)). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); MPEP § 2131.

Claim 1 has been amended to recite nucleotide sequences comprising at least 50 nucleotides. As noted above, support for this amendment is found, for example, at page 44, lines 3-6 and page 71, lines 24-27 of the application as filed. Additionally, virtually all of the probe sequences listed in Tables 7-13, 15 and 16 have at least 50 nucleotides, typically between 50 and 70 nucleotides. Since claims 2-8, 21 and 30 depend, directly or indirectly, from claim 1, they all incorporate each of the limitations of claim 1.

Fodor does not disclose an oligonucleotide matrix comprising each possible 50-mer. Moreover, Fodor states at col. 22, lines 8-16 (emphasis added):

> As indicated above, there are 65,536 8-mers, 262,144 9-mers, 1,048,576 10-mers, 4,194,304 11-mers, etc. As the length of the oligomer increases the number of different probes which must be synthesized also increases at a rate of a factor of 4 for every additional nucleotide. Eventually the size of the matrix and the limitations in the resolution of regions in the matrix will reach the point where an increase in number of probes becomes disadvantageous.

Thus, Fodor teaches that it would be utterly impractical to make a chip containing every possible 50-mer. Since Fodor does not contain any specific teachings regarding SARS-CoV probes, it clearly does not teach each and every element of the present invention and therefore does not constitute an anticipating prior art reference. Accordingly, it is respectfully submitted that this rejection under 35 U.S.C. § 102(b) may properly be withdrawn.

Anticipation by Shi as Evidenced by Marra

Claims 1-8, 15, 21 and 30 are rejected under 35 U.S.C. § 102(a) as allegedly being anticipated by Shi *et al.* (*Chin. Sci. Bull.* 2003, 48(12):1165-1169, hereinafter "Shi") as evidenced by Marra *et al.* (*Science* 2003, 300:1399-1404, hereinafter "Marra").

Shi allegedly teaches an oligonucleotide microarray for SARS-CoV detection. Marra allegedly teaches the complete SARS-CoV genome. Applicants respectfully traverse this rejection.

As noted above, claim 1 has been amended to recite nucleotide sequences comprising at least 50 nucleotides. Additionally, claim 1 has been amended to recite specific non-SARS-CoV infectious organisms causing SARS-like symptoms and non-SARS-CoV infectious organisms damaging the human immune system. Since claims 2-8, 15, 21 and 30 depend, directly or indirectly, from claim 1, they all incorporate each of the limitations of claim 1.

Shi teaches a nucleotide array for detecting SARS-CoV comprising 30 specific 60-mer oligonucleotides designed to cover the entire genome of the first submitted SARS-CoV strain (GeneBank Accession No. AY274110) (abstract). Shi further teaches that oligo 10 in Table 1 is a

common sequence of SARS-CoV, bovine coronavirus, murine hepatitis virus, rat coronavirus and avian infectious bronchitis virus (page 1167, Table 1). Marra teaches that some of the oligonucleotides disclosed in Table 1 of Shi correspond to the Replicase 1A and Spike glycoprotein (S-gene) regions of the SARS-CoV genome. None of the non-SARS-CoV organisms taught in Shi – namely, bovine coronavirus, murine hepatitis virus, rat coronavirus and avian infectious bronchitis virus – is recited in claim 1 as amended. Therefore, Shi does not teach a SARS diagnostic chip comprising one or more oligonucleotide probe(s) complementary to a nucleotide sequence of any of the non-SARS-CoV infectious organisms recited in claim 1 as amended.

Since Shi does not teach a SARS diagnostic chip comprising one or more oligonucleotide probe(s) complementary to a nucleotide sequence of any of the non-SARS-CoV infectious organisms recited in claim 1 as amended, Shi does not teach each and every element of the present invention and therefore does not meet the strict identity standard for anticipation. Accordingly, Applicants respectfully submit that this rejection under 35 U.S.C. § 102(a) may be withdrawn.

Rejections under 35 U.S.C. § 103

Fodor in View of Ruan

Claims 9 and 10 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Fodor as applied to claims 1-8, 21 and 30 above and further in view of Ruan *et al.* (*The Lancet* 2003, 361(9371):1779-85, hereinafter "Ruan").

The teachings of Fodor have been briefly discussed above. The Office acknowledges that Fodor does not explicitly teach the sequence of SEQ ID NO:210 (which corresponds to a SARS-CoV Replicase oligonucleotide probe PBS00024). To cure this deficiency, the Office cites Ruan, which allegedly teaches a nucleotide sequence comprising a region having 100% identity with SEQ ID NO:210. The Office argues that it would have been *prima facie* obvious to a person skilled in the art at the time of the invention to combine the teachings of Fodor and Ruan to arrive at the presently claimed invention. Applicants respectfully traverse this rejection.

The obviousness analysis under 35 U.S.C. § 103(a) requires the consideration of the scope and content of the prior art, the level of skill in the relevant art, and the differences between the prior art and the claimed subject matter must be considered. *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727 (2007) (*citing Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966)). To establish a *prima facie* case of obviousness a three-prong test must be met. First, the prior art must reference must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974). Second, there must be some suggestion or motivation, either in the references or in the knowledge generally available among those of ordinary skill in the art, to modify the reference to achieve the claimed invention. *KSR* at 1731. And third, there must be a reasonable expectation of success found in the prior art. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991).

In this case, as discussed above, Fodor does not teach an oligonucleotide matrix comprising every possible 50-mer. Moreover, Fodor does not contain any SARS-CoV specific teachings. Thus, the combination of Fodor and Ruan fails to teach or suggest all the limitations of claim 1 as amended. In the absence of a teaching or suggestion of each and every claim element, the cited combination fails to provide the motivation to practice the presently claimed invention with a reasonable expectation of success.

Accordingly, it is respectfully submitted that the Office has failed to establish a *prima facie* case of obviousness, and this rejection under 35 U.S.C. § 103(a) may properly be withdrawn.

Fodor in View of Briese

Claims 11 and 12 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Fodor as applied to claims 1-8, 21 and 30 above and further in view of Briese *et al.* (U.S. Pub. No. 2004/0265796, hereinafter "Briese").

The teachings of Fodor have been briefly discussed above. The Office acknowledges that Fodor does not explicitly teach the sequence of SEQ ID NO:225 (which corresponds to a SARS-CoV N-gene oligonucleotide probe PBS00040). To cure this deficiency, the Office cites Briese,

which allegedly teaches a nucleotide sequence comprising a region having 100% identity with SEQ ID NO:225. The Office argues that it would have been *prima facie* obvious to a person skilled in the art at the time of the invention to combine the teachings of Fodor and Briese to arrive at the presently claimed invention.

The combination of Fodor and Briese does not render claims 11 and 12 obvious for substantially the same reasons as those set forth above with respect to Fodor and Ruan. Namely, the combination of Fodor and Briese does not teach or even suggest a diagnostic chip featuring all the limitations recited in claims 11 and 12. In the absence of a teaching or suggestion of each and every claim element, the cited combination fails to provide the motivation to practice the presently claimed invention with a reasonable expectation of success.

Accordingly, it is respectfully submitted that the Office has failed to establish a *prima facie* case of obviousness, and this rejection under 35 U.S.C. § 103(a) may properly be withdrawn.

Fodor in View of Vilalta

Claims 13 and 14 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Fodor as applied to claims 1-8, 21 and 30 above and further in view of Vilalta *et al.* (WO 2005021707: March 2005, hereinafter "Vilalta").

The teachings of Fodor have been briefly discussed above. The Office acknowledges that Fodor does not explicitly teach the sequence of SEQ ID NO:229 (which corresponds to a SARS-CoV S-gene oligonucleotide probe PBS00044). To cure this deficiency, the Office cites Vilalta, which allegedly teaches a nucleotide sequence comprising a region having 100% identity with SEQ ID NO:229. The Office argues that it would have been *prima facie* obvious to a person skilled in the art at the time of the invention to combine the teachings of Fodor and Vilalta to arrive at the presently claimed invention.

The combination of Fodor and Vilalta does not render claims 13 and 14 obvious for substantially the same reasons as those set forth above with respect to Fodor and Ruan. Namely, the combination of Fodor and Vilalta does not teach or even suggest a diagnostic chip featuring all the limitations recited in claims 13 and 14. In the absence of a teaching or suggestion of each and every claim element, the cited combination fails to provide the motivation to practice the presently claimed invention with a reasonable expectation of success.

Accordingly, it is respectfully submitted that the Office has failed to establish a *prima facie* case of obviousness, and this rejection under 35 U.S.C. § 103(a) may properly be withdrawn.

Fodor in View of Martoglio

Claims 16-19 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Fodor as applied to claims 1-8, 21 and 30 above and further in view of Martoglio *et al.* (*Mol. Med.* 2000, 6(9):750-765, hereinafter "Martoglio").

The teachings of Fodor have been briefly discussed above. Regarding claims 16 and 17, the Office acknowledges that Fodor does not teach the spiking of a non-SARS-CoV sequence in the sample, and also does not teach that the sequence is of *Arabidopsis* origin. Regarding claims 18 and 19, the Office acknowledges that Fodor does not teach the inclusion of an immobilization control probe or a positive control probe. To cure these deficiencies, the Office cites Martoglio, which allegedly teaches the inclusion of these probes in a microarray format, and argues that it would have been *prima facie* obvious to a person skilled in the art at the time of the invention to combine the teachings of Fodor and Martoglio to arrive at the presently claimed invention.

The combination of Fodor and Martoglio does not render claims 16-19 obvious for substantially the same reasons as those set forth above with respect to Fodor and Ruan. Namely, the combination of Fodor and Martoglio does not teach or even suggest a diagnostic chip featuring all the limitations recited in claims 16-19. In the absence of a teaching or suggestion of each and every

claim element, the cited combination fails to provide the motivation to practice the presently claimed invention with a reasonable expectation of success.

Accordingly, it is respectfully submitted that the Office has failed to establish a *prima facie* case of obviousness, and this rejection under 35 U.S.C. § 103(a) may properly be withdrawn.

Fodor in View of Saiki

Claim 20 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Fodor as applied to claims 1-8, 21 and 30 above and further in view of Saiki *et al.* (*P.N.A.S.* 1989, 86:6230-6234, hereinafter "Saiki").

The teachings of Fodor have been briefly discussed above. Saiki allegedly teaches an embodiment wherein at least one of the oligonucleotide probe comprises, at its 5' end, a poly dT region to enhance its immobilization on the support. The Office argues that it would have been *prima facie* obvious to a person skilled in the art at the time of the invention to combine the teachings of Fodor and Saiki to arrive at the presently claimed invention.

The combination of Fodor and Saiki does not render claim 20 obvious for substantially the same reasons as those set forth above with respect to Fodor and Ruan. Namely, the combination of Fodor and Saiki does not teach or even suggest a diagnostic chip featuring all the limitations recited in claim 20. In the absence of a teaching or suggestion of each and every claim element, the cited combination fails to provide the motivation to practice the presently claimed invention with a reasonable expectation of success.

Accordingly, it is respectfully submitted that the Office has failed to establish a *prima facie* case of obviousness, and this rejection under 35 U.S.C. § 103(a) may properly be withdrawn.

Fodor in View of Marra

Claims 22-28 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Fodor as applied to claims 1-8, 21 and 30 above and further in view of Marra.

The teachings of Fodor have been briefly discussed above. With regard to claims 22 and 23, Marra allegedly teaches an embodiment wherein the non-SARS-CoV infectious organism causing SARS-like symptoms is a human coronavirus (Figure 1, legend). With regard to claims 24-29, Marra allegedly teaches that a variety of additional viruses and organisms are listed as related to SARS-CoV phylogenetically. (*Id.*) The Office argues that it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to have extended the teachings of Fodor to include the additional non-SARS-CoV infectious organisms disclosed by Marra to arrive at the claimed invention with a reasonable expectation for success. The Office then makes presumably unintentional references to the teachings of Shi, and essentially argues that one of ordinary skill in the art at the time of the invention would have been motivated to have extended the teachings of Fodor to include the additional non-SARS-CoV infectious organisms disclosed by Marra to arrive at the claimed invention with a reasonable expectation for success.

As an initial matter, this rejection is moot with respect to the canceled claims 22 and 25. With respect to claims 23, 24 and 26-28, Applicants respectfully traverse this rejection.

Contrary to the Office's position that it would have been obvious to one of ordinary skill in the art at the time of the invention "to have extended the teachings of Fodor to include the additional non-SARS-CoV infectious organisms disclosed by Marra," neither reference teaches or even suggests the idea of combining SARS-CoV and non-SARS-CoV diagnostics on one chip. As discussed above, Fodor does not contain any SARS specific teachings at all. Accordingly, Fodor cannot possibly teach a chip for distinguishing SARS-CoV from non-SARS-CoV infections. Since Fodor does not teach the idea of distinguishing SARS-CoV from non-SARS-CoV infections, there is no teaching or suggestion whatsoever that could reasonably be "extended" by including any additional non-SARS-CoV infectious organisms.

Additionally, the combination of Fodor and Marra does not render claims 23, 24 and 26-28 obvious for substantially the same reasons as those set forth above with respect to Fodor and Ruan. Namely, the combination of Fodor and Marra does not teach or even suggest a diagnostic chip featuring all the limitations recited in claims 23, 24 and 26-28. In the absence of a teaching or suggestion of each and every claim element, the cited combination fails to provide the motivation to practice the presently claimed invention with a reasonable expectation of success.

Accordingly, it is respectfully submitted that the Office has failed to establish a *prima facie* case of obviousness, and this rejection under 35 U.S.C. § 103(a) may properly be withdrawn.

Shi in View of Ruan

Claims 9 and 10 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Shi as applied to claims 1-8, 15, 21 and 29-30 above and further in view of Ruan.

The teachings of Shi have been briefly discussed above. The Office acknowledges that Shi does not explicitly teach the sequence of SEQ ID NO:210 (which corresponds to a SARS-CoV Replicase oligonucleotide probe PBS00024). To cure this deficiency, the Office cites Ruan, which allegedly teaches a nucleotide sequence comprising a region having 100% identity with SEQ ID NO:210. The Office argues that it would have been *prima facie* obvious to a person skilled in the art at the time of the invention to combine the teachings of Shi and Ruan to arrive at the presently claimed invention.

As discussed above, claim 1 as amended recites specific non-SARS-CoV infectious organisms causing SARS-like symptoms and non-SARS-CoV infectious organisms damaging the human immune system. Moreover, none of the non-SARS-CoV organisms taught in Shi – namely, bovine coronavirus, murine hepatitis virus, rat coronavirus and avian infectious bronchitis virus – is recited in claim 1 as amended. Since claims 9 and 10 depend, directly or indirectly, from claim 1, they all incorporate all of the limitations of claim 1. Accordingly, Shi does not teach a SARS

diagnostic chip comprising one or more oligonucleotide probe(s) complementary to a nucleotide sequence of any of the non-SARS-CoV infectious organisms recited in claim 1 as amended.

Since Ruan does not contain any teachings that would remedy this deficiency of Shi, it is apparent that the combination of Shi and Ruan does not teach or even suggest a diagnostic chip featuring all the limitations recited in claims 9 and 10. In the absence of a teaching or suggestion of each and every claim element, the cited combination fails to provide the motivation to practice the presently claimed invention with a reasonable expectation of success.

Accordingly, it is respectfully submitted that the Office has failed to establish a *prima facie* case of obviousness, and this rejection under 35 U.S.C. § 103(a) may properly be withdrawn.

Shi in View of Briese

Claims 11 and 12 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Shi as applied to claims 1-8, 15, 21 and 29-30 above and further in view of Briese.

The teachings of Shi have been briefly discussed above. The Office acknowledges that Shi does not explicitly teach the sequence of SEQ ID NO:225 (which corresponds to a SARS-CoV N-gene oligonucleotide probe PBS00040). To cure this deficiency, the Office cites Briese, which allegedly teaches a nucleotide sequence comprising a region having 100% identity with SEQ ID NO:225. The Office argues that it would have been *prima facie* obvious to a person skilled in the art at the time of the invention to combine the teachings of Shi and Briese to arrive at the presently claimed invention.

The combination of Shi and Briese does not render claims 11 and 12 obvious for substantially the same reasons as those set forth above with respect to Shi and Ruan. Namely, the combination of Shi and Briese does not teach or even suggest a diagnostic chip featuring all the limitations recited in claims 11 and 12. In the absence of a teaching or suggestion of each and every

claim element, the cited combination fails to provide the motivation to practice the presently claimed invention with a reasonable expectation of success.

Accordingly, it is respectfully submitted that the Office has failed to establish a *prima facie* case of obviousness, and this rejection under 35 U.S.C. § 103(a) may properly be withdrawn.

Shi in View of Vilalta

Claims 13 and 14 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Shi as applied to claims 1-8, 15, 21 and 29-30 above and further in view of Vilalta.

The teachings of Shi have been briefly discussed above. The Office acknowledges that Shi does not explicitly teach the sequence of SEQ ID NO:229 (which corresponds to a SARS-CoV S-gene oligonucleotide probe PBS00044). To cure this deficiency, the Office cites Vilalta, which allegedly teaches a nucleotide sequence comprising a region having 100% identity with SEQ ID NO:229. The Office argues that it would have been *prima facie* obvious to a person skilled in the art at the time of the invention to combine the teachings of Shi and Vilalta to arrive at the presently claimed invention.

The combination of Shi and Vilalta does not render claims 13 and 14 obvious for substantially the same reasons as those set forth above with respect to Shi and Ruan. Namely, the combination of Shi and Vilalta does not teach or even suggest a diagnostic chip featuring all the limitations recited in claims 13 and 14. In the absence of a teaching or suggestion of each and every claim element, the cited combination fails to provide the motivation to practice the presently claimed invention with a reasonable expectation of success.

Accordingly, it is respectfully submitted that the Office has failed to establish a *prima facie* case of obviousness, and this rejection under 35 U.S.C. § 103(a) may properly be withdrawn.

Shi in View of Martoglio

Claims 16-19 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Shi as applied to claims 1-8, 15, 21 and 29-30 above and further in view of Martoglio.

The teachings of Shi have been briefly discussed above. Regarding claims 16 and 17, the Office acknowledges that Shi does not teach the spiking of a non-SARS-CoV sequence in the sample, and also does not teach that the sequence is of *Arabidopsis* origin. Regarding claims 18 and 19, the Office acknowledges that Shi does not teach the inclusion of an immobilization control probe or a positive control probe. To cure these deficiencies, the Office cites Martoglio, which allegedly teaches the inclusion of these probes in a microarray format, and argues that it would have been *prima facie* obvious to a person skilled in the art at the time of the invention to combine the teachings of Shi and Martoglio to arrive at the presently claimed invention.

The combination of Shi and Martoglio does not render claims 16-19 obvious for substantially the same reasons as those set forth above with respect to Shi and Ruan. Namely, the combination of Shi and Martoglio does not teach or even suggest a diagnostic chip featuring all the limitations recited in claims 16-19. In the absence of a teaching or suggestion of each and every claim element, the cited combination fails to provide the motivation to practice the presently claimed invention with a reasonable expectation of success.

Accordingly, it is respectfully submitted that the Office has failed to establish a *prima facie* case of obviousness, and this rejection under 35 U.S.C. § 103(a) may properly be withdrawn.

Shi in View of Saiki

Claim 20 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Shi as applied to claims 1-8, 21 and 29-30 above and further in view of Saiki.

The teachings of Shi have been briefly discussed above. Saiki allegedly teaches an embodiment wherein at least one of the oligonucleotide probe comprises, at its 5' end, a poly dT

region to enhance its immobilization on the support. The Office argues that it would have been *prima facie* obvious to a person skilled in the art at the time of the invention to combine the teachings of Shi and Saiki to arrive at the presently claimed invention.

The combination of Shi and Saiki does not render claim 20 obvious for substantially the same reasons as those set forth above with respect to Shi and Ruan. Namely, the combination of Shi and Saiki does not teach or even suggest a diagnostic chip featuring all the limitations recited in claim 20. In the absence of a teaching or suggestion of each and every claim element, the cited combination fails to provide the motivation to practice the presently claimed invention with a reasonable expectation of success.

Accordingly, it is respectfully submitted that the Office has failed to establish a *prima facie* case of obviousness, and this rejection under 35 U.S.C. § 103(a) may properly be withdrawn.

Shi in View of Marra

Claims 22-28 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Shi as applied to claims 1-8, 15, 21 and 29-30 above and further in view of Marra.

The teachings of Shi have been briefly discussed above. With regard to claims 22 and 23, Marra allegedly teaches an embodiment wherein the non-SARS-CoV infectious organism causing SARS-like symptoms is a human coronavirus (Figure 1, legend). With regard to claims 24-28, Marra allegedly teaches that a variety of additional viruses and organisms are listed as related to SARS-CoV phylogenetically. (*Id.*) The Office argues that it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to have extended the teachings of Shi to include the additional non-SARS-CoV infectious organisms disclosed by Marra to arrive at the claimed invention with a reasonable expectation for success. The Office argues that Marra "does establish the phylogenetic relationship between the SARS-CoV genome, and particular coding features within the genome as compared to these non-SARS-CoV sequences." Since Shi already includes a probe complementary to a non-SARS-CoV sequence, the Office concludes that one of

ordinary skill in the art at the time of the invention would have been motivated to have extended the teachings of Shi to include the additional non-SARS-CoV infectious organisms disclosed by Marra to arrive at the claimed invention with a reasonable expectation for success.

Contrary to the Office's position that it would have been obvious to one of ordinary skill in the art at the time of the invention "to have extended the teachings of Shi to include the additional non-SARS-CoV infectious organisms disclosed by Marra," neither reference teaches or even suggests the idea of combining SARS-CoV and non-SARS-CoV diagnostics on one chip. Shi merely teaches that oligo 10 in Table 1 is a common sequence of SARS-CoV, bovine coronavirus, murine hepatitis virus, rat coronavirus and avian infectious bronchitis virus. Thus, it would be practically impossible to distinguish a SARS-CoV infection from a non-SARS-CoV infection using the diagnostic array of Shi. Since Shi does not teach the idea of distinguishing SARS-CoV from non-SARS-CoV infections, there is no teaching or suggestion whatsoever that could reasonably be "extended" by including any additional non-SARS-CoV infectious organisms.

"If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." MPEP § 2143.01, citing *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (emphasis added). In this case, Shi teaches an oligonucleotide chip comprising 30 different 60-mer oligonucleotide probes complementary to different parts of the SARS-CoV genome and a number of negative and blank controls (*see* Shi at page 1166, right col.) Thus, the diagnostic chip of Shi is suitable for one purpose only – to detect SARS-CoV. In contrast, the chip of the present invention combines SARS-CoV diagnostics with detection other viral infections that produce SARS-like symptoms or may otherwise damage the human immune system. Thus, the presently claimed chip clearly has a different principle of operation than the SARS-CoV diagnostic chip disclosed in Shi, which tends to negate the Office's *prima facie* case of obviousness.

Accordingly, it is respectfully submitted that the Office has failed to establish a *prima facie* case of obviousness, and this rejection under 35 U.S.C. § 103(a) may properly be withdrawn.

CONCLUSION

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 514572002000. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: July 6, 2009

Respectfully submitted,

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